REMARKS

Claims 1-8 and 15-26 are pending in the application. Claims 1-8 and 15-25 are rejected. Claim 26 is objected to.

Claim 1 has been amended to state that the amide monomers are free of amine linkages in the side chains. This amendment reflects that language in the claim as original filed.

Claim 1 has been further amended to state that the amide is an acrylamide. Support for this amendment is found at p. 2, lines 24-27 of the Description and the Examples.

Accordingly, no new matter is submitted with this Reply.

Reply to the Rejection of Claims 1-8 and 15-25 under 35 U.S.C. § 112, 1st paragraph

The Examiner has rejected claims 1-8 and 15-25 as failing to comply with the written description requirement. Claim 1 has been amended to state that the amine monomers are free of amine linkages in the side chain, which the Examiner has indicated as having support in the Description.

It is believed that these remarks overcome the Examiner's rejection of claims 1-8 and 15-25 as failing to comply with the written description requirement. Withdrawal, therefore, of the rejection of claims 1-8 and 15-25 under 35 U.S.C. § 112, first paragraph is respectfully requested.

Reply to the Rejection of Claims 1-8, 15-18 and 20-25 under 35 U.S.C. § 102(b) or 103(a)

The Examiner has rejected Claims 1-8, 15-18 and 20-25 as being anticipated by, or, alternatively, rendered obvious in view of U.S. Patent No. 5,843,192 to Kirk *et al.* ("Kirk"). Specifically, the Examiner states –

> Kirk et al teach a composition useful in a washing process containing at least one vinyl amide polymer. The vinyl amide polymer contains from 5 to 100 weight percent of at least one vinyl amide monomer, and from 0 to 95 weight percent of one or more vinyl ester monomers. Kirk et al also provides a method of cleaning an article and a method of providing soil resistance to an article using the vinyl amide polymer. See Abstract. The vinyl amide polymer preferably contains less than 3 weight percent of one or more ethylenically unsaturated carboxylic acid monomers, based on the total weight of the monomers. The carboxylic acid monomers include acrylic acid, methacrylic acid, maleic acid, itaconic acid, etc. The vinyl amide polymer preferably contains less than 3 weight percent of one or more acrylamide monomers. Suitable acrylamide monomers include acrylamide,

N,N-dimethylacrylamide, acrylamidoalkylenesulfonic acid, etc. See column 4, lines 30-50 and claim 1. The cleaning solution may optionally contain additional components such as surfactants, builders, buffering agents, bleaching agents, enzymes, perfumes, etc. See column 5, lines 1-35. The treatment solution is contacted with the article by immersing the article with the solution. See column 6, lines 25-45.

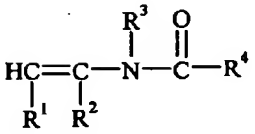
Specifically, Kirk et al teach a composition containing 8% linear alkyl benzene sulfonate, 16% alcohol ether sulfate, 6% nonionic surfactant, 0.5% enzyme, 2% vinyl amide polymer, etc. See column 14, lines 50-69. Note that, the Examiner maintains that the vinyl amide polymer would inherently have the same mole percent of amide monomer as recited by the instant claims. Accordingly, the broad teachings of Kirk et al are sufficient to anticipate the material limitations of the instant claims.

Alternatively, even if the broad teaching of Kirk et al are not sufficient to anticipate the material limitations of the instant claims, it would have been nonetheless obvious to one of ordinary skill in the art to arrive at the claimed mole percent of amide polymer of the composition in order to provide the optimum soil resistant properties to the composition since Kirk et al teach that the amount and type of amide used in formulating the resultant polymer may be varied. . . .

. . . Applicant states that unlike the vinyl amide monomers of Kirk et al, the amide monomers as recited by the instant claims have no nitrogen linked to the polymer backbone in the side chain. First, as stated previously, the Examiner sees no distinction between the polymers of Kirk et al and those recited by the instant claims. Note that, clearly nitrogens can be present in the polymer backbone as indicated by instant claim 2 in which it states "wherein said amide monomer has at least one amide moiety in the polymer backbone. . . ." The amide monomer as taught by Kirk et al does contain a nitrogen but this would be in the polymer backbone as recited by instant claim 2. Additionally, claim 1 recites an amide monomer unit in the polymer which would have a nitrogen atom as a repeating unit which would not be considered in the side chain. The Examiner maintains that the polymers as taught by Kirk et al fall within the scope of the instant claims.

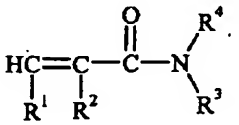
For the following reasons, Applicants respectfully traverse the Examiner's rejection of claims 1-4, 6-8 and 20-25 as being anticipated by Kirk.

As previously indicated, Kirk teaches a composition useful in a washing process containing at least one vinyl amide polymer having 5-100 weight % of at least one vinyl amide monomer, and 0-95 weight % of one or more vinyl ester monomers, and at least one additive (Abstract; col. 2, lines 28-49). The at least one vinyl amide polymer required in the composition of Kirk is formed from, as polymerized units, at least one vinyl amide monomer of the formula –



(col. 3, lines 12-33; claim 1). Preferably the vinyl amide polymer is formed from 5 to 100 weight percent of the above vinyl amide monomer (col. 3, lines 37-41). Examples of such vinyl amide monomer include N-vinyl formamide, N-vinyl acetamide, N-vinyl-N-methyl acetamide or combinations thereof (col. 3, lines 34-36).

The vinyl amide polymer can also be formed so that it contains **less than three (3) weight percent** (most preferably 0 to 0.5 weight percent) of one or more **optional acrylamide monomers** of the formula –

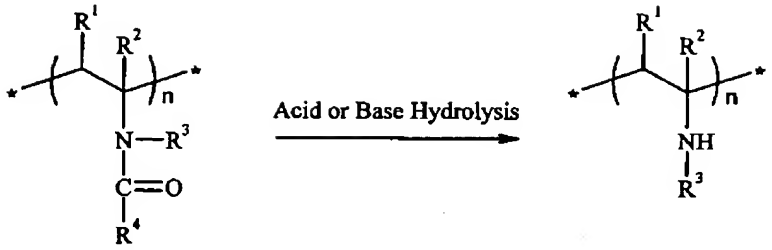


(col. 4, lines 39-55; claim 1). Examples of such acrylamide monomers include N,N-dimethyl acrylamide. (In contrast, see Example 1 of the present description wherein the N,N-dimethyl acrylamide is present in the polymer in an amount of 90%.)

Only polymers formed from vinyl amide monomers (N-vinyl formamide (NVF) or N-vinyl-N-methyl acetamide (NVA)) and vinyl ester monomers (vinyl acetate) are exemplified (see vinyl amide polymer Examples 1-7, Tables 1-8 of Kirk).

Kirk teaches a washing composition that includes the above vinyl amide polymer in a weight percentage of 0.01 to 20 weight % of the composition (col. 7, lines 22-29) (only 2.0 weight % exemplified, Tables 5 and 6). The vinyl amide polymer is formed from at least the above described vinyl amide monomer in the weight percentages provided. The washing composition also includes at least one additive selected from a surfactant, a fabric softening agent or combinations thereof. The washing composition can further optionally include other additives, for examples, builders such as citric acid, and bleaching agents such as perborates, percarbonates or chlorine-generating substances (col. 7, line 30 – col. 9, line 43).

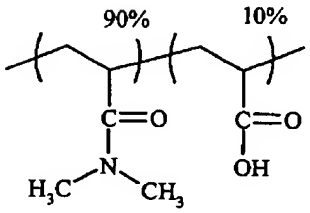
It is well known that vinyl amide based polymers such as the required vinyl amide polymers of Kirk easily hydrolyze under both acid and base conditions as follows –



For example, polyvinyl formamide (a polyvinyl amide) is known to readily hydrolyze to polyvinyl amines in acidic or basic solution (*see*, Stinson, Stephen, *Quest for commercial polyvinylamine advances*, CHEMICAL & ENGINEERING NEWS, p. 32, Sep. 6, 1993 (stating that "polyvinylformamide is readily hydrolyzed to [polyvinyl amine] in acidic or basic solution")). N-ethyl formamide is also known to readily hydrolyze under such conditions (*see*, Badesso, R.J. *et al.*, *Synthesis of Amine Functional Homopolymers with N-Ethenylformamide*, POLYMER PREPRINTS, vol. 34, pp. 251-52 (1993) (stating that a "particular advantage of [N-ethenyl formamide] is the ease of hydrolysis of its polymers"); *see also*, Badesso, R.J. *et al.*, *High and Medium Molecular Weight Poly(vinylamine)*, POLYMER PREPRINTS, vol. 32, pp. 110-11 (1991)) . Col. 3, lines 34-36 of Kirk indicates that N-vinyl formamide (NVF, Examples 1-4 and 7 of Kirk) is an example of its **required** vinyl amide monomers. As such, this hydrolysis is recognized as a commercial route to polyvinyl amine.

Most cleaning compositions or formulations contain either an acid or a base. As shown above, the washing composition of Kirk can include acidic builders and/or alkaline bleaching agents. The above hydrolysis information indicates that polyvinyl amide polymers such as those described in Kirk will hydrolyze in these cleaning formulations during storage and in end use, losing performance over time.

In contrast to Kirk, the amide polymers of the present invention are attached to the polymer backbone by a carbonyl group (C=O) and not by the nitrogen linkages as is the case with polyvinyl amide polymers. For example, the following illustrates an amide polymer according to the present invention (exemplified in Example 1 of the present description) –



Example 1 - copolymer of N,N-dimethyl acrylamide (90 mole %) and acrylic acid (10 mole %)

As shown above, because the amide polymers of the present invention are not attached to the polymer backbone by nitrogen linkages (in contrast to vinyl amide polymers such as is taught by Kirk), they are not subject to the relatively facile hydrolysis that polyvinyl amide polymers such as the vinyl amide polymers of Kirk undergo. As such, the amide polymers of the present invention do not lose performance during storage or in the washing process.

Kirk requires that at least 5 weight percent of its polymer include a vinyl amide monomer. In contrast, the present invention requires that at least 5 weight percent of its polymer include an acrylamide monomer. Therefore, for the purpose of a 102 rejection, Kirk does not teach with specificity each and every element of the claimed invention.

From an obviousness standpoint, the less than 3 weight percent of acrylamide monomers used to form the vinyl amide polymer of Kirk is not equivalent to the 5 to 100 mole percent of acrylamide monomer units as claimed in claim 1 of the present invention. Further, Kirk teaches away from the use of acrylamides in that it states that only 0 to 0.5 weight % of the acrylamide monomer is preferred in its polymer, and provides no examples of polymers that include acrylamide monomers. In this respect, Kirk teaches away from polymers formed from at least 5 mol % of one or more acrylamide monomers.

For at least these reasons, Kirk does not provide motivation to one skilled in the art to modify its polymer to achieve the polymer of the presently claimed invention, and therefore cannot be said to render the presently claimed invention unpatentable.

It is believed that these remarks overcome the Examiner's rejection of claims 1-8, 15-18 and 20-25 as being anticipated by Kirk under 35 U.S.C. § 102(b) or, alternatively, rendered obvious in view of Kirk under 35 U.S.C. § 103(a). Withdrawal of the rejection is respectfully requested.

Based on the above amendments and remarks, allowance of the claims is believed to be in order, and such allowance is respectfully requested.

Respectfully submitted,

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